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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/034,480	12/20/2001	Kazuo Hirose	WAKI-203	2161

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EXAMINER

LAVARIAS, ARNEL C

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 03/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/034,480

Applicant(s)

HIROSE ET AL.

Examiner

Arnel C. Lavarias

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION*Specification*

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a *single paragraph on a separate sheet within the range of 50 to 150 words*. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. ✓ The abstract of the disclosure is objected to because it is not a single paragraph within the range of 50 to 150 words in length. Correction is required. See MPEP § 608.01(b).
3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

4. The disclosure is objected to because of the following informalities:

✓ Page 5, line 6- 'defective' should read 'defects'

✓ Page 6, line 6- 'pint' should read 'pin'

✗ Page 8, line 19; ✗ Page 21, line 4- 'deflexion' should read 'deflection'

✓ Page 17, line 7- 'crystalinity' should read 'crystallinity'

✗ Page 34, line 23- 'mm' should read 'μm'

✗ Page 37, line 22- 'hold' should read 'held'

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✓ Page 39, line 15- 'are' should read 'area'.

Appropriate correction is required.

Claim Objections

5. Claims 11-16 are objected to because of the following informalities:

✓ Claim 11, line 5- 'zerconium' should read 'zirconium'. Claims 12-16 are dependent on Claims 11, and hence inherit the deficiencies of Claim 11.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-4, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikegame et al. in view of Hayakawa et al.

Ikegame et al. discloses an optical pick-up (See Figures 2, 3, 9, 10) comprising a support shaft (See 12 in Figure 10), and ~~a~~ lens holder (See 6 in Figure 10) having a bearing part (See the bore of 6 which is engaged with shaft 12 in Figure 10) which fits on the supporting shaft rotatably, wherein the lens holder is a resin molding product (See col. 8, lines 7-17) comprising a lens supporting part (See 6a in Figure 10) having a lens receiving surface (See surface on which element 21 rests in Figure 10), and the bearing

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part having a bearing surface disposed vertically to the lens receiving surface (See surface on which element 21 rests and the bore of 6 which is engaged with shaft 12 in Figure 10) . Additionally, Ikegame et al. discloses the optical pick-up having a plurality of lens receiving surfaces disposed on it (see 4, 5, in Figures 2, 3) and the resin molded product being a liquid crystal resin composition (See col. 8, lines 7-17). Ikegame et al. lacks the resin molded product comprising a gate at an end of the bearing part disposed at an opposite side of the lens receiving surface and disposed parallel to an inside perimeter of the bearing part. However, Hayakawa et al. teaches a method of producing a lens holder for an optical pick-up using an injection molding technique (See Figures 1, 2, 4) wherein the resin is injected into a dye through a gate (See 10 in Figures 1, 2, 4; Abstract) such that the gate is disposed parallel to the inside perimeter of the bearing part (See 4 in Figures 1, 2, 4). Hayakawa et al. additionally teaches that the position of the gate may also be moved to the circumference of the lens holder, as shown in Figures 3, 6, and 7. One skilled in the art would realize that the gate may be positioned anywhere on the surface of the lens holder, such as at an end of the bearing part disposed at an opposite side of the lens receiving surface (See recess next to 3 in Figures 1, 2, 4) or i.e. the gates 10 are located on the opposite side of where they are located in Figures 1, 2, 4, so long as the molten resin is injected to fill the entire dye to form the lens holder. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the resin molded product comprise a gate at an end of the bearing part disposed at an opposite side of the lens receiving surface and disposed parallel to an inside perimeter of the bearing part, as taught by Hayakawa et al., in the optical pick-up

of Ikegame et al. for the purpose of improving dimensional accuracy of the bearing part as well as increasing the mechanical rigidity of the lens holder.

8. Claims 5-7, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikegame et al. in view of Hayakawa et al. as applied to Claims 1 and 4 above, and further in view of either Tachikawa et al. or Makabe et al.

Ikegame et al. in view of Hayakawa et al. discloses the invention as set forth above in Claims 1 and 4 above, except for the resin molded product comprising at least one of a fibrous filler and a flake filler, and has flexural elastic modulus of 10 GPa or more.

However, both Tachikawa et al. and Makabe et al. teach the use of resins, such as liquid crystal polymer resin, for producing precision moldings, such as of optical pick-ups. In particular, Tachikawa et al. teaches the use of liquid crystal polymer resins for molding optical pick-ups (See col. 20, line 23-col. 21, line 15) in which fillers and fibers have been incorporated to increase the mechanical strength and other characteristic properties.

For example, fillers, such as mica, talc, glass fibers, or carbon fibers, are added to the liquid crystal polymer resin composition to increase the elastic modulus and shield electromagnetic waves (See col. 13, line 40-col. 18, line 25). Makabe et al. teaches the use of liquid crystal resins for molding optical pick-ups (See Claims 1, 17; col. 15, line 24-col. 16, line 6) in which fillers and fibers, such as mica, talc, glass fibers, and carbon fibers, have been incorporated to provide good mechanical properties (See col. 10, lines 14-26). Additionally, the amount of such fibrous and flake fillers into the liquid crystal polymer resin is adjusted to achieve a particular elastic modulus, such as 10 GPa or higher (See Claims 1, 20; col. 18, lines 13-20; Table 1). Therefore, it would have been

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obvious to one having ordinary skill in the art at the time the invention was made to have the resin molded product comprise at least one of a fibrous filler and a flake filler, and have flexural elastic modulus of 10 GPa or more, as taught by either Tachikawa et al. or Makabe et al., in the optical pick-up of Ikegame et al. in view of Hayakawa et al., for the purpose of adjusting the various properties, such as mechanical and electrical properties, of the final lens holder product based on the intended requirements.

9. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikegame et al. in view of Hayakawa et al. as applied to Claim 1 above, and further in view of Hirose et al.

Ikegame et al. in view of Hayakawa et al. discloses the invention as set forth above in Claim 1, except for the supporting shaft being formed of a zirconia-containing ceramic. However, Hirose et al. teaches an optical pick-up (See Figures 1, 2, 3) that is very similar to the claimed invention, wherein at least one of the supporting shaft (See 2 in Figures 1, 2, 3) and the bearing part (See 5, 10 in Figures 1, 2, 3) of the optical pick-up is formed of ceramics containing zirconia (See Abstract). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the supporting shaft be formed of a zirconia-containing ceramic, as taught by Hirose et al., in the optical pick-up of Ikegame et al. in view of Hayakawa et al., for the purpose of increasing the dimension accuracy of the supporting shaft, thus allowing for higher accuracy positioning of the optical pick-up beam.

10. Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirose et al. in view of either Tachikawa et al. or Makabe et al.

Hirose et al. discloses an optical pick-up (See Figures 1, 2, 3) comprising a support shaft (See 2 in Figures 1, 2, 3), and an lens holder (See 8, 9 in Figures 1, 2, 3) having a bearing part (See 5, 10 in Figures 1, 2, 3) which fits on the supporting shaft rotatably, wherein the supporting shaft is formed of ceramics containing zirconia (See Abstract), and wherein the bearing part is a resin molding product (See col. 6, lines 19-47). Hirose et al. lacks the bearing part being a molded product of a liquid crystal resin composition having a flexural elastic modulus of 10 GPa or more. However, both Tachikawa et al. and Makabe et al. teach the use of resins, such as liquid crystal polymer resin, for producing precision moldings, such as of optical pick-ups. In particular, Tachikawa et al. teaches the use of liquid crystal polymer resins for molding optical pick-ups (See col. 20, line 23-col. 21, line 15) in which fillers and fibers have been incorporated to increase the mechanical strength and other characteristic properties. For example, fillers, such as mica, talc, glass fibers, or carbon fibers, are added to the liquid crystal polymer resin composition to increase the elastic modulus and shield electromagnetic waves (See col. 13, line 40-col. 18, line 25). Makabe et al. teaches the use of liquid crystal resins for molding optical pick-ups (See Claims 1, 17; col. 15, line 24-col. 16, line 6) in which fillers and fibers, such as mica, talc, glass fibers, and carbon fibers, have been incorporated from 1 to 80 parts by weight (See Abstract for the inclusion of aluminum borate whiskers) to provide good mechanical properties (See col. 10, lines 14-26). Additionally, the amount of such fibrous and flake fillers into the liquid crystal polymer resin is adjusted to achieve a particular elastic modulus, such as 10 GPa or higher (See Claims 1, 20; col. 18, lines 13-20; Table 1). Therefore, it would have been obvious to

one having ordinary skill in the art at the time the invention was made to have the resin molded product comprise at least one of a fibrous filler and a flake filler, and have flexural elastic modulus of 10 GPa or more, as taught by either Tachikawa et al. or Makabe et al., in the optical pick-up of Hirose et al., for the purpose of adjusting the various properties, such as mechanical and electrical properties, of the final lens holder product based on the intended requirements.

11. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirose et al. in view of either Tachikawa et al. or Makabe et al. as applied to Claim 11 above, and further in view of Ikegame et al.

Hirose et al. in view of either Tachikawa et al. or Makabe et al. discloses the invention as set forth above in Claim 11, except for the lens holder including a plurality of object lens holes. However, Ikegame et al. teaches an optical pick-up device (See Figures 2, 3, 9, 10) that includes multiple object lens holes (See 4, 5, in Figure 2) in the lens holder (See 6 in Figure 2). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the lens holder include a plurality of object lens holes, as taught by Ikegame et al., in the optical pick-up of Hirose et al. in view of either Tachikawa et al. or Makabe et al., for the purpose of providing enhanced read/write capabilities, particularly where multiple optical recording media, each with different optical characteristics, must read from/written to.

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Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 703-305-4007. The examiner can normally be reached on M-F 8:30 AM - 5 PM.

The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.



Arnel C. Lavarias
March 12, 2003

